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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,362	11/19/2003	John L. Jorstad	036390-0102	3776
22428	7590	11/16/2004		
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER TRAN, LEN	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/715,362

Applicant(s)

JORSTAD ET AL.

Examiner

Len Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of claims 1-28 in the reply filed on 9/9/04 is acknowledged. The traversal is on the ground(s) that the alleged species were improperly indentified. This is not found persuasive because applicant's summary of invention shows three different embodiments. First embodiment, having a solid and liquid to form a slurry. Second embodiment, having a solid heat sink with a liquid metal to form a slurry. Third, injecting slurry into the cavity to form molded metal part having an appendage.

The requirement is still deemed proper and is therefore made FINAL.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Shibata et al (US 6,478,075).

Shibata et al disclose the method of making a metal part by semi solid injection comprising the steps of combining a first solid metal and a second liquid metal in the chamber of

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the an injection machine to form a slurry and injecting the slurry into a mold cavity to mold a metal part (col. 7, lines 39-50).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US '075) as applied to claim 1 above, and further in view of Apelain et al (US 4,902,475).

Shibata et al disclose the claimed invention above, but fails to teach providing a refining grain agent into the shot chamber before the liquid metal and the metal comprise of A390 or A356.

However, Apelain et al disclose providing a grain refiner, such as phosphorous, for using a hypereutectic alloy (col. 2, lines 37-47). For hypoeutectic, a grain refiner, such as boron is used (col. 1, lines 39-49). The metals are A390 or A356 (Col. 1, lines 30-36). The grain refiners are used to expedite a fine grain microstructure (col. 1, lines 45-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to use grain refiners, such as phosphorus and boron, for A390 and A356 as taught by Apelain et al, in Shibata et al in order to expedite fine grain microstructure.

In addition, it is inherent to have the slurry temperature for A390 and A356 is between 560 and 590 degrees C and 575 and 585 degrees C, respectively, since these temperatures are within the semi-solid phase.

7. Claims 3, 18-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US '075) as applied to claim 1 above, and further in view of Nakao et al (US 6,505,670).

Shibata et al disclose the claimed invention above, but fail to teach providing a first solid portion before the second liquid portion in the shot chamber and removing a third portion from the molded part and put in the first chamber.

However, Nakao et al disclose the method of removing the third portion from the molded part as solid and put in the first chamber, then pour the liquid metal over the solid portion (col. 8, lines 54-col. 9, line 46) for the purpose of saving heat energy.

Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nakao et al, pouring the liquid metal over the solid metal, with Shibata et al in order to save heat energy resulting in saving costs.

In addition, it is obvious to have surface area to volume ratio great than 10:1 and horizontal width at least two times greater than vertical depth, since that would depends on the final cast product.

### ***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran  
Examiner  
Art Unit 1725



LT

November 14, 2004